CLAIMS

I CLAIM:

1. A system for moving an aircraft thrust reverser, comprising:

a power drive unit operable to supply a drive force;

a thrust reverser actuator assembly coupled to receive the drive force and operable, in response thereto, to selectively move the thrust reverser between a stowed position and a deployed position;

a main reservoir containing a hydraulic fluid therein;

a lock actuator assembly coupled to the main reservoir and adapted to receive a lock control signal, the lock actuator assembly responsive to the lock control signal to compress, and thereby pressurize, the hydraulic fluid; and

one or more lock assemblies, each lock assembly in fluid communication with the main reservoir and configured, in response to the hydraulic fluid pressurization, to move to one of a locked or an unlocked position, to thereby prevent or allow, respectively, thrust reverser movement.

2. The system of Claim 1, wherein the lock actuator assembly comprises:

an electric motor adapted to receive the lock control signal and operable, in response thereto, to rotate in at least a first direction; and

an actuator coupled to the motor and the main reservoir, the actuator configured to translate in at least a first direction in response to the motor rotation in the first direction, to thereby compress the hydraulic fluid.

3. The system of Claim 2, wherein the lock actuator assembly motor is free to rotate in at least a second direction when the lock control signal is not received.

4. The system of Claim 1, wherein:

the main reservoir comprises a flexible membrane; and

the lock actuator assembly is responsive to the lock control signal to compress the flexible membrane to thereby compress the hydraulic fluid.

5. The system of Claim 4, wherein the lock actuator assembly comprises:

an electric motor adapted to receive the lock control signal and operable, in response thereto, to rotate in at least a first direction;

an actuator coupled to the motor and the reservoir, the actuator configured to translate in at least a first direction in response to the motor rotation in the first direction, whereby translation of the actuator in the first direction results in the compression of the hydraulic fluid.

6. The system of Claim 1, wherein the main reservoir comprises a substantially hollow cylinder having an inner peripheral surface, and wherein the lock actuator assembly comprises:

an electric motor adapted to receive the lock control signal and operable, in response thereto, to selectively rotate in at least a first direction;

an actuator coupled to the motor, the actuator configured to translate linearly in at least a first direction in response to the motor rotation in the first direction; and

a plunger coupled to the actuator and having an outer peripheral surface in substantially fluid sealed contact with the main reservoir inner peripheral surface, whereby translation of the actuator in the first direction results in the compression of the hydraulic fluid.

7. The system of Claim 1, wherein at least one of the lock assemblies is mounted on the thrust reverser actuator assembly and is configured to selectively prevent or allow movement thereof.

8. The system of Claim 1, wherein at least one of the lock assemblies is selectively coupled to the thrust reverser to thereby selectively prevent or allow movement thereof.

9. The system of Claim 1, wherein at least one of the lock assemblies is coupled to the power drive unit and is configured, in response to the hydraulic fluid pressurization, to move to one of a set or a release position, to thereby prevent or allow, respectively, thrust reverser actuator assembly movement.

10. The system of Claim 1, wherein one or more of the lock assemblies are biased toward the locked position.

11. An electro-hydraulic thrust reverser lock actuation system, comprising:

a main reservoir containing a hydraulic fluid therein;

a lock actuator assembly coupled to the main reservoir and adapted to receive a lock control signal, the lock actuator assembly responsive to the lock control signal to compress, and thereby pressurize, the hydraulic fluid; and

one or more lock assemblies, each lock assembly in fluid communication with the main reservoir and configured, in response to the hydraulic fluid pressurization, to move to one of a locked or an unlocked position.

12. The system of Claim 11, wherein the lock actuator assembly comprises:

an electric motor adapted to receive the lock control signal and operable, in response thereto, to rotate in at least a first direction; and

an actuator coupled to the motor and the main reservoir, the actuator configured to translate in at least a first direction in response to the motor rotation in the first direction, to thereby compress the hydraulic fluid.

13. The system of Claim 12, wherein the lock actuator assembly motor is free to rotate in at least a second direction when the lock control signal is not received.

14. The system of Claim 1, wherein:

the main reservoir comprises a flexible membrane; and

the lock actuator assembly is responsive to the lock control signal to compress the flexible membrane to thereby compress the hydraulic fluid.

15. The system of Claim 14, wherein the lock actuator assembly comprises:

an electric motor adapted to receive the lock control signal and operable, in response thereto, to rotate in at least a first direction;

an actuator coupled to the motor and the reservoir, the actuator configured to translate in at least a first direction in response to the motor rotation in the first direction, whereby translation of the actuator in the first direction results in the compression of the hydraulic fluid.

16. The system of Claim 11, wherein the main reservoir comprises a substantially hollow cylinder having an inner peripheral surface, and wherein the lock actuator assembly comprises:

an electric motor adapted to receive the lock control signal and operable, in response thereto, to selectively rotate in at least a first direction;

an actuator coupled to the motor, the actuator configured to translate linearly in at least a first direction in response to the motor rotation in the first direction; and

a plunger coupled to the actuator and having an outer peripheral surface in substantially fluid sealed contact with the main reservoir inner peripheral surface, whereby translation of the actuator in the first direction results in the compression of the hydraulic fluid.

17. The system of Claim 11, wherein at least one of the lock assemblies is mounted on the thrust reverser actuator assembly and is configured to selectively prevent or allow movement thereof.

18. The system of Claim 11, wherein at least one of the lock assemblies is selectively coupled to the thrust reverser to thereby selectively prevent or allow movement thereof.

19. The system of Claim 11, wherein at least one of the lock assemblies is coupled to the power drive unit and is configured, in response to the hydraulic fluid pressurization, to move to one of a set or a release position, to thereby prevent or allow, respectively, thrust reverser actuator assembly movement.

20. The system of Claim 11, wherein one or more of the lock assemblies are biased toward the locked position.

21. In an aircraft thrust reverser system including a reservoir containing hydraulic fluid therein, an actuator assembly coupled to the reservoir, and one or more hydraulic locks in fluid communication with the reservoir, a method of controlling the locks, comprising:

energizing the actuator assembly to thereby translate at least a portion thereof in a first direction;

pressurizing a hydraulic fluid in response to the translation of the actuator assembly in the first direction; and

moving the locks to one of a locked or an unlocked position in response to the hydraulic fluid pressurization.

22. The method of Claim 21, further comprising:

deenergizing the actuator assembly to thereby allow the pressurized hydraulic fluid to translate at least a portion thereof in a second direction that is opposite the first direction, whereby the hydraulic fluid is depressurized; and

moving the locks to one of an unlocked or locked position in response to the hydraulic fluid pressurization.

23. The method of Claim 21, further comprising:

energizing the actuator assembly to translate at least a portion thereof in a second direction that is opposite the first direction to thereby depressurize the hydraulic fluid; and

moving the locks to one of an unlocked or locked position in response to the hydraulic fluid pressurization.